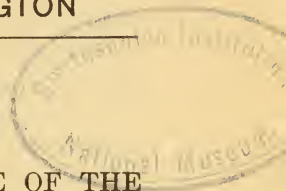


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FLIES OF THE FAMILY DROSOPHILIDAE OF THE  
DISTRICT OF COLUMBIA REGION, WITH KEYS  
TO GENERA, AND OTHER NOTES, OF BROADER  
APPLICATION.

BY J. R. MALLOCH AND W. L. McATEE.

The group of flies associated together in this paper under the family name Drosophilidae consists in large part of those genera so placed by other authors, and in smaller part of genera included in Geomyzidae by authors. Nowhere in the order is there so much diversity of opinion as to family limits, as is evident in the case of this and allied families of the Acalyptrata. In order to crystallize opinion in so far as this family is concerned we put forward the following list of characters as criteria for the recognition of Drosophilidae. Though it may be that some exotic forms will not come into entire alignment with this summary we believe that taken as a whole these characters will hold throughout the world.

Family characters: Vibrissae present, in the normal position; each orbit with at least two bristles, one of which is directed straight forward; wing with auxiliary vein present, usually incomplete, always very close to first vein; anal cell always present; anal vein present or absent, when present never complete; costa either distinctly or indistinctly broken just beyond humeral vein and again at apex of auxiliary (*i. e.*, just in front of apex of first vein); some or all of the tibiae with a weak preapical dorsal bristle or setula; spiracles of abdomen in membrane; postvertical bristles convergent; all North American genera with at most two pairs of distinct dorsocentrals, except in one species, *Scaptomyza vittata* Coquillett.

The larvae are very similar to those of Ephydriidae, possessing

the same protruded anal respiratory tubes but most of the species lack ventral pseudopods which are so far as we know a constant feature of Ephydriidae. The normal position of these larvae, feeding as they do in liquid or semi-liquid matter with the head immersed, compels the almost exclusive use of the anal respiratory tubes for breathing purposes hence the extension of the anal segments and the faculty of protruding the tubes. After pupation, however, the position is reversed and the puparium floats with the cephalic extremity at or close to the surface. Consequently the prothoracic spiracular organs are brought into use and these are in many cases remarkably extended while the anal tubes are much aborted. This change is very striking in *Aulacigaster leucopeza* (Figs. 16-18) and in *Drosophila colorata*, both of which feed in exuding sap of elm trees.<sup>1</sup>

The present list is based on material in the collections of the U. S. National Museum and Biological Survey. Forty-one species have been collected in the area usually included for the District of Columbia Fauna (all within a radius of 20 miles). The largest State list heretofore recorded is 28 species for New York in Sturtevant's 1921 paper (see bibliography). Twenty-six of the species here treated have been collected on Plummers Island, Md., and 13 additional species in the Great Falls-Little Falls section of the Potomac River Valley.

KEY TO THE NORTH AMERICAN GENERA OF DROSOPHILIDAE.

1. Mesopleura bare .....2.
- Mesopleura setulose .....16.
2. Discal and basal cells of wing separated by a distinct cross-vein<sup>2</sup> .....3.
- No distinct cross-vein between discal and basal cells .....5.
3. Arista microscopically pubescent; eyes higher than long; first posterior cell of wing not narrowed apically....*Sinophthalmus* Coquillett.
- Arista long-plumose; first posterior cell of wing much narrowed apically.....4.
4. Scutellum convex above, evenly rounded in outline, thick to apex; mid tibiae without outstanding setulae on posterodorsal surface basally; second vein gradually nearing costa apically, the angle formed by it and costa about 30 degrees; under side of costal vein beyond apex of second vein, without isolated warts.....

*Amiota* Loew.

<sup>1</sup>For full information on biology of the family consult Sturtevant's 1921 paper.

<sup>2</sup>Sturtevant (1920) places *Gitonides* Knab as a synonym of *Gitona* Meigen, which last has the discal and second basal cells confluent. *Gitonides*, however, has a distinct cross-vein separating these cells and is generically distinct.

- Scutellum flattened above, not evenly rounded in outline, thinned at apex; mid tibiae with a series of distinct rather closely placed setulae on posterodorsal surface basally; second vein running parallel to costa almost to apex of former, joining costa more abruptly, at almost right angles; under side of costal vein beyond apex of second vein with about half a dozen isolated wartlike elevations each of which is surmounted by a minute curved spine (Fig. 1).....*Stegana* Meigen.
- 5. Arista microscopically pubescent; face not carinate .....6.
- Arista with one or more long hairs above, and usually also below.....7.
- 6. Ocellar bristles moderate, in longitudinal line with posterior ocelli, and in transverse line with anterior ocellus.....  
*Pseudiasata* Coquillett.
- Ocellar bristles very long, situated well back of the anterior ocellus, and in line between it and the posterior pair.....  
*Tryptochaeta* Rondani.
- 7. Anal vein absent; face without a central carina; two humeral bristles present.....8.
- Anal vein present at least at base.....9.
- 8. Arista with one very long hair at base above, otherwise bare; costal vein with some fine outstanding setulae from beyond apex of first vein to near apex, which are much longer than diameter of costal vein and rather widely spaced.....*Cladochaeta* Coquillett.
- Arista with several long hairs both above and below; costal vein without any outstanding setulose hairs as above.....  
**Clastopteromyia** Malloch, new genus.
- 9. Thorax with but one pair of dorsocentral bristles.....  
*Mycodrosophila* Oldenberg.
- Thorax with two distinct pairs of dorsocentral bristles.....10.
- 10. Lower orbital bristles reclinate, all 3 orbital bristles present and long.....  
*Chymomyza* Czerny.
- Lower orbital bristle proclinate, the lower reclinate bristle usually small, sometimes absent, if large, situated above the proclinate bristle.....11.
- 11. Costal vein with wartlike elevations as in *Stegana*; lower orbital bristle about as long as upper and at least twice as far from it as from proclinate bristle; costa to apex of third vein.....  
*Leucophenga* Mik.
- Costal vein without such elevations, extending to fourth vein.....12.
- 12. Frons strongly haired, lower orbital bristle well above middle of frons; prescutellar acrostichals strong.....*Rhinoleucophenga* Hendel.
- Frons weakly haired or bare, lower orbital usually well below middle of frons.....13.
- 13. Frons with a large, glossy, bare triangle that extends to or almost to anterior margin, covering most of interfrontalia; epistoma projecting much beyond vibrissal angle; proboscis elongated, about as long as height of head, straight.....*Zygothrica* Wiedemann.

- Frons entirely opaque or subopaque, without well defined shining triangle; epistoma not or very little projecting; proboscis normal.....14.
14. Only one reclinate orbital bristle present; anterior pair of dorso-central thoracic bristles before middle of dorsum; black costal setulae extending almost or quite to apex of fourth vein.....  
*Microdrosophila* Malloch.
- Two reclinate orbital bristles generally present though the lower one is sometimes very small; anterior pair of dorsocentral thoracic bristles well behind middle of dorsum; black costal setulae ceasing a short distance beyond apex of third vein.....15.
15. Thorax with at least six series of setulae in front of dorsocentrals....  
*Drosophila* Meigen.
- Thorax with at most four series of setulae in front of dorsocentrals....  
*Scaptomyza* Hardy.
16. Disc of scutellum setulose.....*Curtonotum* Macquart.
- Disc of scutellum bare.....18.
17. Arista pubescent; ocellars minute.....*Aulacigaster* Macquart.
- Arista plumose; ocellars large.....*Diastata* Meigen.

#### Genus *Sinophthalmus* Coquillett.<sup>1</sup>

The complete discal cell of wing, and microscopically pubescent arista of this genus distinguish it from any in the family occurring in this region. The face is conspicuously carinate, scutellum convex, first posterior cell of wing not narrowed at apex; sixth vein rudimentary, base present; costa to fourth vein, but attenuated apically. There is but one species, *pictus* Coquillett, which is recorded only from California.

#### Genus *Amiota* Loew.

The flies of this genus are frequently attracted by perspiration and cause considerable annoyance by buzzing around the face and getting into ears and eyes. This habit is met with in some other species in the family, notably *Sinophthalmus pictus*, and a few species of *Drosophila*, but so far as we know not in the genus *Stegana*. Several North American and European species of *Amiota* have conspicuous white marks on the face and pleura, but the specific distinctions are not well understood as yet. The immature stages are unknown. Whether *Amiota* is identical with *Phortica* Schiner or not we are at present unable to decide as we have not seen the genotype of the latter, but if they are congeneric then *Amiota* has priority as two species were described by Loew some months before Schiner described *Phortica*. That Loew did not define the genus, and merely described the species under the generic name *Amiota* without stating that it was a new genus, does not to our minds invalidate the use of the generic name.

<sup>1</sup>For bibliography and synonymy the reader is referred in most cases to Sturtevant's 1921 paper.

KEY TO THE NORTH AMERICAN AND EUROPEAN SPECIES OF AMIOTA.

- 1. Thorax glossy black, with humeral angles and a spot on pleura below wing base milk-white; face with lower half milk-white.....2.
- Thorax shining brownish yellow with milk-white marks as above, or brown without such markings; face distinctly or indistinctly marked.....4.
- 2. Hind femur of male with some long yellow bristles below, which are much longer than diameter of femur .....*setigera* Malloch.
- Hind femur without such bristles in male or female.....3.
- 3. Thoracic and frontal bristles and hairs black; hypopygium of male as in Figures 12-13.....*alboguttata* Wahlberg.
- Thoracic and frontal bristles and hairs fulvous; hypopygium of male as in Figures 2-5.....*humeralis* Loew.
- 4. Large species, 3 mm. or over in length, with conspicuous milk-white marks on face, pleura, and humeral angles of thorax; hypopygium of male as in Figures 6-8.....*leucostoma* Loew.
- Smaller species, averaging 2 mm. in length, with no or very faint paler markings on face, pleura, and humeral angles of thorax; hypopygium of male as in Figures 9-11.....*minor* Malloch.

Oldenberg gives the following key to the European species of Phortica. The first species in the key is the genotype of Phortica and is very distinct from the others in color and distinct also in wing venation.

- 1. Thorax pale and dark marked; outer cross-vein about as long as the penultimate section of fourth vein, this at most one-third as long as last section.....*variegata* Fallen.
- Thorax unicolorous, with snow-white spots on shoulders and pleura; outer cross-vein much shorter than penultimate section of fourth, this only one-half or one-third shorter than last section.....2.
- 2. Thorax brownish, because of dense yellowish dusting entirely opaque in male or only slightly shining in the female.....*lacteoguttata* Portchinsky.
- Thorax glossy, only slightly dusted, black or reddish.....3.
- 3. Thorax black.....*alboguttata* Wahlberg.
- Thorax reddish.....*rufescens* Oldenberg.

*A. alboguttata* Wahlberg.—Loew stated that he had seen this species from North America. Judging from the description of the species we consider that he was probably correct though a comparison of the male hypopygia of North American and European specimens is essential to definitely decide the matter. The species is of general occurrence in the District of Columbia region and apparently fairly common. Adults have been collected at dates ranging from May 28 to September 18. P. I.

*A. humeralis* Loew.—This species has yellowish frontal and thoracic bristles according to Mr. Nathan Banks, who has examined the type at our request. This is very probably the species described by Oldenberg as *lacteoguttata* Portchinsky, though it may not be the species which Portchinsky had. Localities: Great Falls, Va., September 7, 1913, Frederick Knab;

Dead Run, Va., June 9, 1915; Plummers Id., Md., June 6, 1914, R. C. Shannon; Glen Echo, Md., July 10, 1921, June 10, 1923, Malloch; Mt. Vernon, Va., June 6, 1915, McAtee.

*A. leucostoma* Loew.—We believe this species is the same as that described from Europe by Oldenberg in 1914 as *rufescens*. It is common at least in up-river localities near Washington, and has been collected during a season extending from May 26 to September 12. P. I.

*A. minor* Malloch.—Originally described from Illinois. The lack of distinct milk-white spots and the small size of the species readily distinguishes it from its allies. It has been taken frequently in the vicinity of Glen Echo and Plummers Id., Md., at dates ranging from June 2 to August 30. P. I.

#### Genus *Stegana* Meigen.

Sturtevant in his paper on this family sunk *Phortica* (= *Amiota*) as a synonym of *Stegana*. This is an error as the genera are quite distinct. He also stated that Loew had reported *curvipennis* Fallen from North America but that he, Sturtevant, had been unable to discover any good reason for separating Loew's specimen from *coleoptrata* Scopoli. The same writer listed *vittata* Coquillett as a synonym of the latter. There are, however, two quite distinct species here and as they agree perfectly with descriptions of the two European species, both of which have already been recorded from America, we assign the European names to the insects. Nothing is known of the early stages of flies of this genus. The adults are common in woods, and are often seen sitting on leaves, where they appear to be of sedentary behavior. They are capable, however, of very rapid movement when disturbed.

#### KEY TO SPECIES.

1. Palpi black on apical half or more; third antennal segment yellow or very slightly infuscated at apex; head much higher than long, height of eye as compared with its length 11 : 7....*curvipennis* Fallen.
- Palpi pale yellow; third antennal segment black; head but little higher than long, height of eye as compared with its length 9.5 : 10....

*coleoptrata* Scopoli.

*S. coleoptrata* Scopoli.—Cabin John Bridge, Md., July 31, 1921; Glen Echo, Md., July 4, 1921, July 16, 23, 1922, Malloch.

*S. curvipennis* Fallen.—Glen Echo, Md., June 18, July 10, 17, 23, 1921, June 17, July 8, 1923; Chain Bridge, Va., May 7, 1922, Malloch; Maywood, Va., June 4, 1922; Glencarlyn, Va., May 7, 1922, McAtee. *Phortica vittata* Coquillett is a synonym of this species.

#### Genus *Pseudiastata* Coquillett.

A very distinct genus, with pubescent arista, ocellars of moderate size, situated directly in line with the posterior ocelli and in transverse line with anterior ocellus, all three orbitals long, the lower incurved, not directed forward, near anterior margin of frons, second about one-fourth as far from anterior as from posterior reclinate bristle; face not carinate.

*P. nebulosa* Coquillett.—Testaceous, the wings maculated with brown. This is the only known species of the genus and no other specimen than the type has been collected. Plummers Id., Md., August 1, 1902, at light, H. S. Barber.

Genus **Tryptochaeta** Rondani.

A slightly aberrant genus, usually placed in Geomyzidae. The frontal chaetotaxy, however, is the same as in *Drosophila*, the wing venation is the same as in *Clastopterymyia*, and the chaetotaxy of the thorax is similar. There is a series of minute black spinules on the apical half of antero-ventral surface of the fore femora similar to that in the genus *Curtonotum* and in *Drosophila immigrans* Sturtevant. The only species known from the United States, *micans* Hendel, occurs in Washington State and in New Mexico.

Genus **Cladochaeta** Coquillett.

This genus contains but one known species, *nebulosa* Coquillett, which occurs in Florida and the West Indies, and is rather closely related to the next genus, the distinguishing characters being noted under the latter.

Genus **Clastopterymyia** Malloch, new genus.

As in the preceding genus the sixth wing-vein is entirely absent, but the arista in *Cladochaeta* had but one long hair above while in this genus it has several both above and below; the costa has some outstanding fine setulose hairs in *Cladochaeta* that are absent in *Clastopterymyia*. The lack of the sixth vein and of a median carina on the face distinguishes it from *Drosophila* in which genus it has hitherto been placed.

Genotype.—*Drosophila inversa* Walker.

*C. inversa* Walker.—The larvae live in the so-called spittle masses of the homopterous genus *Clastoptera* which occur on alder and other plants, and are not at all uncommon at Glen Echo, Md., and elsewhere near and in the District of Columbia. Localities for adult specimens at hand: Cabin John Bridge, Va., July 31, 1921; Glen Echo, Md., August 2, 6, 1922, June 10, 1923; Chain Bridge, Va., September 11, 18, 1921, Malloch.

Genus **Mycodrosophila** Oldenberg.

There is but one known species of this genus in the United States.

*M. dimidiata* Loew.—A common species, often found sitting on the under side of fungi; is known to come to light. Has been collected in every month except those from February to May, and has been frequently taken in November, December, and January. P. I.

Genus **Chymomyza** Czerny.

The anterior reclinate bristle on orbits in this genus is situated in front of the proclinate bristle; the face is not carinate and is narrowed below; and the post-vertical bristles are absent in both the species occurring in our region.

## KEY TO SPECIES.

1. Wing with a dark mark at apex of first vein and two fuscous fasciae, one at middle and the other between middle and apex; fore legs yellow.....*amoena* Loew.
- Wing hyaline, costal cell slightly yellowish, costal vein and base of third vein much darker than the other veins; fore femora, tibiae and basal segment of fore tarsi deep black, remainder yellow....  
*procnemis* Williston.

*C. amoena* Loew.—An abundant species, often seen on windows and about garbage over the surface of which it walks with vibrating wings in similar manner to the next species which more often occurs about wounds on tree trunks, especially oaks. *C. amoena* has been collected at light and on sap and has been bred from walnut and butternut hulls, and from rotten corn. Adults have been collected from April 18 to November 23. P. I.

*C. procnemis* Williston. A very widely distributed species, originally described from the West Indies. Local records: Dead Run, Va., June 18, 21, 1914, at sap of tulip tree, R. C. Shannon; Glen Echo, Md., July 16, 1922, Malloch. Malloch found the larvae of this species in large numbers under oak bark in Illinois.

Genus *Leucophenga* Mik.

Sturtevant in his key to the genera of this family places this genus in the section in which the lower reclinate orbital bristle is as far from the proclinate bristle as from the upper reclinate. This is an error and we assume that his numbers 15 and 17 have been transposed.

## KEY TO SPECIES.

1. Palpi not noticeably broadened, club-shaped; abdomen testaceous yellow, first visible tergite with a spot on each side, second with a central spot, third and fourth each with five spots, larger on third, fifth with two spots, black; a brown spot on costa of wing at apex of second vein and another at apex of first.....*varia* Walker.
- Palpi much broadened, leaflike; abdomen testaceous, with grayish pruinescence, and the following brown markings: two or three spots on first visible tergite and five spots on each of the others, all of these except on first connected along posterior margin of tergites by a band of same color leaving four pale grayish pruinose spots on anterior half of each tergite; wing marked as in *varia* but with a brown cloud on each cross-vein which is not noticeable in that species.....*maculosa* Coquillett.

*L. maculosa* Coquillett.—Stubblefield Fall, Va., October 23, 1921; Chain Bridge, Va., September 18, 1921, Malloch; Washington, D. C., July 6, 1896, on mushrooms.

*L. varia* Walker (*Opomyza signicosta* Walker).—An abundant and generally distributed species; season May 17 to October 21; comes to light; has been bred from fungi. P. I.



Genus *Rhinoleucophenga* Hendel.

We can find no characters more reliable than those mentioned in the key for distinguishing this genus from *Drosophila*. However, most species of that genus have two humeral bristles while in *Rhinoleucophenga* there is but one. The only known species of the genus, *obesa* Loew, may yet be found in our region as it has been taken in Florida and as far north as Ocean Grove, Virginia. Hendel described the genus *Rhinoleucophenga* in 1917, thus having priority over *Pseudophortica* Sturtevant which was described in 1918. Hendel's species *pallida* is a synonym of *obesa* Loew.

Genus *Zygothrica* Wiedemann.

A tropical genus unrepresented in this region. But two New World species are recorded by Sturtevant as belonging to this genus, *dispar* Wiedemann with the wings clear, and *aldrichi* Sturtevant with a conspicuous black mark along costa. There is however another species which should be included, namely *vittatifrons* Williston, described as a *Drosophila*. From the other two species it may be distinguished by the large apical spot on the wing, and the presence of six linear black vittae on dorsum of thorax, the outer one on each side being interrupted at the suture. We have seen this species, originally described from the West Indies, from Brazil.

The genus closely resembles *Drosophila* but the shining, well defined frontal triangle readily separates it from that genus. The head in the male of *dispar* is drawn out sideways and is much broader than the thorax, but in the female of that species and in both sexes of *aldrichi*, as well as in the specimen of *vittatifrons* examined the head is almost normal in structure.

Genus *Microdrosophila* Malloch.

*Microdrosophila* Malloch, J. R. Ent. News, 32, 1921, p. 312 [Genotype *Drosophila quadrata* Sturtevant].

*M. quadrata* Sturtevant.—A specimen of this, the only known species, was collected at Chain Bridge, Va., September 18, 1921, Malloch. The species occurs also in Alabama, Georgia, Indiana, and Illinois.

Genus *Drosophila* Meigen.

This is by far the largest genus in the family and the one in which most of the known species have been described. The great majority of the species feed in their larval stages in decaying fruits and other vegetable matter but the larval habits of most of the aberrant forms are unknown. The key given below contains those species known to occur in our region and a few, inclosed in brackets, may occur though so far not actually taken here.

KEY TO SPECIES.

1. Each forewing with about thirteen fuscous spots; yellow species, averaging about 2 mm. in length .....*guttifera* Walker.
- Wings if spotted, with at most the cross-veins and apices of longitudinal veins infuscated.....2.

2. Wings brown, paler towards inner or hind margin, usually with two subquadrate clear or dark marks on apical half, one between veins 2 and 3, the other between veins 3 and 4; outer cross-vein much bent, sinuate.....*sigmoides* Loew.
- Wings usually hyaline, sometimes with the cross-veins and apices of longitudinal veins infuscated; outer cross-vein not sinuate, usually straight.....3.
3. At least the basal segment of fore tarsus with a minute comb of stiff black bristles at apex (males).....4.
- None of the segments of fore tarsi with comb of bristles at apices.....7.
4. First and second segments of fore tarsi each with an apical comb....  
[*obscura* Fallen].
- Only the basal segment of fore tarsi with an apical comb.....5.
5. Acrostichal setulae in front of the dorsocentral bristles in six series; facial carina narrow, rather sharp, not broadened below.....  
*affinis* Sturtevant.
- Acrostichal setulae in front of dorsocentrals in eight series; facial carina broad below.....6.
6. Male hypopygium with a small beak-like central lateral process, about as large as clasper; cheek broader.....*ampelophila* Loew.
- Male hypopygium with a large broad central lateral process which is much larger than the clasper; cheek narrower.....  
*simulans* Sturtevant.
7. Fore femur in both sexes with a series of minute strong black bristles on apical half of anteroventral surface (Fig. 14).....  
*immigrans* Sturtevant.
- Fore femur without such bristles in either sex.....8.
8. Thorax with a pair of distinct though short, rather closely placed bristles about one third from anterior margin on disc; apices of wing-veins 2 to 4 more or less clouded.....*putrida* Sturtevant.
- Thorax with only the usual regular hairs on disc, no pair outstanding...9.
9. Mesonotum with five fuscous vittae, the outer one on each side along lateral margin; a broad vitta along upper part of pleura.....  
*buscki* Coquillett.
- Mesonotum and pleura not marked as above.....10.
10. Mesonotum and scutellum grayish brown pruinose, with dark brown spots at base of each bristle and hair, the spots sometimes aggregated in places.....11.
- Mesonotum either indistinctly vittate or unmarked.....12.
11. Abdominal tergites each with a pale yellowish spot on the lateral undercurved parts.....*repleta* Wollaston.
- No yellowish spots on lateral undercurved portions of tergites.....  
[*hydei* Sturtevant].
12. Abdomen with four series of black spots at apices of tergites dorsally which are frequently connected posteriorly.....13.
- Abdomen without four series of black spots as above, sometimes with three such series, usually with a more or less distinct regular dark posterior fascia on each tergite.....15.

13. Fourth vein very pronouncedly deflected at apex, the cell in front of it conspicuously widened at apex (Fig. 15).....  
*deflecta* Malloch, new species.
- Fourth vein not noticeably deflected at apex, the cell in front of it not evidently widened at apex.....14.
14. Thorax very distinctly shining; cross-veins conspicuously clouded, tips of longitudinal veins less distinctly so.....*quinaria* Loew.
- Thorax very slightly shining; cross-veins slightly clouded, tips of longitudinal veins indistinctly so.....*transversa* Fallen.
15. Abdomen with a black fuscous central spot on hind margins of visible tergites 3 to 5 inclusive, and a blackish transverse spot on each side of tergites 1 and 2 and usually, though less distinctly, on those with the central spot; both cross-veins and apices of veins 2 and 3 clouded.....*tripunctata* Loew.
- Abdomen lacking central spots as above, sometimes with an interrupted dark fascia on hind margin of each tergite.....16.
16. Apices of all complete longitudinal veins clouded; outer cross-vein at less than its own length from apex of fifth vein; abdomen with a broad fuscous vitta on each side and a broad pale stripe on dorsum.....*lativittata* Malloch, new species.
- Apices of veins not clouded; abdomen not vittate as above.....17.
17. Acrostichal hairs just in front of dorsocentral bristles in six series.....18.
- Acrostichal hairs just in front of dorsocentrals in eight series.....22.
18. Inner cross-vein not over one-third from base of discal cell; yellow species, with a brownish band on hind margin of each abdominal tergite which is interrupted in center.....[*ordinaria* Coquillett].
- Inner cross-vein distinctly over one-third from base of discal cell.....19.
19. Facial carina broad and very distinctly sulcate below; large dark brown species, averaging at least 3 mm. in length.....*colorata* Walker.
- Facial carina if broad below not at all or very indistinctly sulcate; smaller species.....20.
20. Facial carina slender, not widened nor elevated below, the depression above mouth margin shallow and broad.....*affinis* Sturtevant.
- Facial carina distinctly elevated below, sometimes distinctly widened.....21.
21. Facial carina broad below, faintly sulcate.....*melanica* Sturtevant.
- Facial carina slender below, not sulcate.....*pseudomelanica* Sturtevant.
22. Second section of costa at least 3.5 as long as third.....23.
- Second section of costa not three times as long as third.....24.
23. Second tarsal segment barely half as long as basal segment.....  
*robusta* Sturtevant.
- Second tarsal segment much more than half as long as basal segment, especially on fore legs.....*funebri* Fallen.
24. Dark brown species.....*obscura* Fallen.
- Yellow species.....25.
25. Cheeks relatively narrow.....*melanogaster* Meigen.
- Cheeks relatively broad.....*simulans* Sturtevant.

*D. affinis* Sturtevant.—Common and generally distributed; adults have been collected from March 13 to August 12; the species comes to sap, and to light, and has been taken on fungi, among them *Clitocybe illudens*. P. I.

*D. busckii* Coquillett.—Virginia near Plummers Id., Md., November 2, 1915, bred from butternut hulls, R. C. Shannon; Glen Echo, Md., June 11, July 12, 1922, Malloch.

*D. colorata* Walker.—This our largest species of the genus is a truly wild form, being confined to woodlands where it feeds on sap both in the larval and adult stages. Adults have been collected from March 24 to September 17, most of them, however, in April. P. I.

**D. deflecta** Malloch, new species.—Female: Shining rufous yellow. Abdomen with four series of small black spots on dorsum situated near hind margins of the tergites. Legs yellow. Wings clear, both cross-veins and apices of all the complete longitudinal veins clouded.

Head and thorax as in *quinaria* Loew. Legs normal. Inner cross-vein at middle of discal cell, outer at about three-fourths of its own length from apex of fifth, slightly curved and rather oblique; last section of fourth vein hardly longer than preceding section, deflected at tip, the cell in front of it much widened apically, section of costa between veins 3 and 4 as long as preceding section (Fig. 12). Length, 2 mm.

Type, Eastern Branch, near Bennings, D. C., August 20, 1915, McAtee.

There is at least one specimen of this species in the collection of Illinois Natural History Survey taken in Illinois.

*D. funebris* Fabricius.—Washington, D. C., August 9, October 10, 1906, March 24, 1907, McAtee; September 29, 1913, R. C. Shannon; Maryland near Plummers Id., May 5, 1915; Virginia near Plummers Id., November 2, 1915, bred from butternut hulls, R. C. Shannon; Maywood, Va., November 13, 1921, McAtee.

*D. guttifera* Walker.—Glen Echo, Md., August 2, 1922, Malloch.

*D. immigrans* Sturtevant.—Glen Echo, Md., August 30, 1923, Malloch.

**D. lativittata** Malloch, new species.—Female: Head yellowish testaceous, opaque, orbits and ocellar triangle slightly shining; third antennal segment pale brownish. Thorax glossy testaceous yellow. Abdomen highly polished, testaceous yellow, with a broad fuscous vitta along each side which almost obscures the dark lateral spot on each side of the hind margin of the tergites. Legs yellow. Wings yellowish hyaline, a small fuscous cloud at apex of each vein from 2 to 5 inclusive, and both cross-veins narrowly clouded.

Facial carina well developed, gradually broadened below, flat at lower extremity, rays of arista 5+3. Thorax as in *transversa*. Fore femur with 3 or 4 posteroventral and posterodorsal bristles. Section of costa from apex of first to apex of second veins about four times as long as preceding section, that between apices of second and third about one third longer than the section beyond it; outer cross-vein at less than its own length from apex of fifth vein, the latter quite conspicuously deflected at apex; last section of fourth vein about one-fifth longer than preceding section. Length, 2.5 mm.

Type, Chain Bridge, Va., September 10, 1922, Malloch.

There are some specimens of this species in the collection of Illinois Natural History Survey, from Illinois.

*D. melanica* Sturtevant.—Virginia near Plummerville Id., April 19, 1914, November 2, 1915, bred from butternut hulls, R. C. Shannon; Plummerville Id., Md., June 8, 1914, at light, E. A. Schwarz and H. S. Barber; August 3, 1915, at light; Maryland near Plummerville Id., August 5, 8, 1914, at sap of tulip tree, R. C. Shannon.

*D. ampelophila* Loew.—This is the most common "fruit fly" seen indoors but from the records of collection evidently it has not altogether given up life in the open. Adults have been collected from May 4 to November 2; and have been bred from butternut hulls. P. I.

*D. pseudomelanica* Sturtevant.—Dead Run, Va., April 14, 1914; Cabin John Bridge, Md., March 15, 1914, R. C. Shannon.

*D. putrida* Sturtevant.—Common, all collections so far being in Piedmont localities; season, March 25 to November 18; comes to light, and has been bred from fungi. P. I.

*D. quinaria* Loew.—About as common as last and more generally distributed. Adults have been collected from March 24 to October 29; comes to light, and has been found feeding on squash. P. I.

*D. repleta* Wollaston.—Common, seen more often than any other species about urinals; however, it lives also in a state of nature, and has been bred from butternut hulls, and from the stem of a waterlily. A record, needless to say, of some years standing, notes that the species is attracted to beer. Adults have been collected from July 17 to November 30. P. I.

*D. robusta* Sturtevant.—Fairly common in Piedmont localities; season April 19 to September 29. P. I.

*D. sigmoides* Loew.—Rather scarce, all records in September and October; Stubblefield Fall, Va., October 23, 1921; Chain Bridge, Va., September 10, 18, 1921, Malloch; Chain Bridge, D. C., September 12, 1913, R. C. Shannon; Plummerville Id., Md., October 26, 1906, A. K. Fisher; Beltsville, Md., October 22, 1915; Washington, D. C., October 14, 1906, McAtee.

*D. simulans* Loew.—Maywood, Va., June 9, 1922, McAtee.

*D. sulcata* Sturtevant.—Fairly common and generally distributed; adults have been collected from March 24 to July 7; they frequent sap, having been taken here at sap of birch, maple, and grape. P. I.

*D. transversa* Fallen.—Common; season April 8 to November 23; frequently comes to light. P. I.

*D. tripunctata* Loew.—Fairly common; adults have been collected from June 6 to November 26; the species comes to light, and to sap; and has been bred from mushroom and squash. P. I.

#### Genus *Scaptomyza* Hardy.

A rather poorly differentiated genus; however, the slender form of the species and the presence of but two or four series of short hairs between the anterior dorso-centrals are characters that enable one to recognize the known species with comparative certainty.

## KEY TO THE SPECIES.

1. Palpi largely black; apical pair of scutellar bristles very noticeably shorter than the basal pair; mesonotum with three pairs of dorso-centrals, the anterior pair short.....*vittata* Coquillett.
- Palpi entirely yellow; mesonotum with but two pairs of distinct dorso-centrals.....2.
2. Apical pair of scutellar bristles much shorter than the basal pair; humeri each with one strong bristle; four series of acrostichals between anterior pair of dorsocentrals; wing usually with a blackish apical spot.....*adusta* Loew.
- Apical pair of scutellar bristles as long as basal pair.....3.
3. Each humerus with two long bristles; four series of acrostichals between anterior dorsocentrals; wing usually with a blackish apical spot....  
*terminalis* Loew.
- Each humerus with one strong bristle; two series of acrostichals between anterior dorsocentrals; wing without a black apical spot  
*graminum* Fallen.

*S. adusta* Loew.—Common; season May 19 to November 30; comes to light; the larvae have been found mining turnip leaves. P. I.

*S. graminum* Fallen.—Abundant; adults have been collected in every month but January; they come to light; and have been bred from butternut hulls. P. I.

*S. terminalis* Loew.—Rosslyn, Va., May 1, 1913, R. C. Shannon.

*S. vittata* Coquillett.—Rosslyn, Va., April 28, 1913; Plummerville, Md., June 8, 1914, at light; Maryland near Plummerville, August 17, 1914, R. C. Shannon; Glen Echo, Md., August 21, 1921, Malloch.

Genus *Curtonotum* Macquart.

Handel (Deutsch. Ent. Zeitschr., 1917, p. 43) proposed the subfamily Cyrtotonotinae for this and one other genus and at the same time he used the subfamily Diastatinae, including *Diastata*, *Tryptochaeta* and one other genus in it. We deprecate the multiplicity of subfamilies for the reception of one or a few aberrant genera, believing that such a course does not tend to improve the classification nor make it more understandable to the average student, and unless the divisions are based upon characters of more fundamental significance than the comparative completeness of the auxiliary vein and the presence or absence of certain bristles that are admittedly unstable we consider the recognition of numerous subfamilies inadvisable.

In *Curtonotum* the very long costal spines and the large size of the species remind one of the family Helomyzidae in which the genus has sometimes been placed. It finds its closest affinities, however, in the Drosophilidae, but differs from all the genera herein included, except two, in having the mesopleura setulose. There is but one species recorded from the United States.

*C. helvum* Loew.—Locally common in moist, shady situations; season, July 1 to August 20.

Genus *Aulacigaster* Macquart.

A rather aberrant genus so far as the adult characters are concerned, but undoubtedly belonging to this family judging from the larval and pupal characters and habitat. The larvae and puparia (Figs. 16–18) are found in sap exuding from wounds in tree trunks and the adults breed there also, sometimes in large numbers, their steady flight and deliberate actions closely resembling those of many other members of the family.

The presence of pseudopods on the ventral surface of the larva is worthy of note in this genus but there are certain species belonging to the genus *Drosophila* that also possess pseudopods, one of the latter occurring in sap along with this genus. This *Drosophila* larva can jump though larvae of *Aulacigaster* observed did not manifest such ability. The larva of *Aulacigaster* can protrude the anal respiratory tubes in a remarkable manner, becoming exceptionally attenuated posteriorly in doing so.

There is but one species in our region, which is found also in Europe. Sturtevant is in error in stating that the ocellar bristles are absent; they are present but minute; the postverticals are absent.

*A. leucopeza* Meigen.—Common; season March 13 to October 23; adults frequent sap and have been reared from larvae found in sap. P. I.

Genus *Diastata* Meigen.

There are six species recorded from North America as belonging to this genus. Only one of these has been taken in our region but two others possibly may occur and a key is given to facilitate their identification.

KEY TO SPECIES.

1. Only the outer cross-vein and costa slightly infuscated; inner cross-vein about one-fourth from base of discal cell and almost directly below or but little beyond apex of first vein.....[*vagans* Loew].  
— A much larger portion of wings blackened.....2.
2. Wing hyaline, with a large spot over outer cross-vein and another over inner, dark brown, subcostal cell blackish.....[*nebulosa* Loew].  
— Wing blackish, with five or six hyaline spots.....*decemguttata* Walker.

*D. decemguttata* Walker (*pulchra* Loew).—Found in damp places, usually in woods. Plummerville Id., Md., July 4, 21, 1907, October 5, 1915; Maryland near Plummerville Id., July 26, 1914, McAtee; Glen Echo, Md., July 16, August 2, 22, 1922, Malloch.

BIBLIOGRAPHY.

ALDRICH, J. M.

A catalogue of North American Diptera (or two-winged flies).

Smiths. Misc. Coll. 46, 1905, pp. 639–644.

Records 7 species from the District of Columbia.

CHITTENDEN, F. H.

Some insects injurious to vegetable crops. Bul. 33, U. S. Div. Ent., 1902, pp. 75–77.

*Scaptomyza flaveola* Meigen (*graminum* Fallen) mining leaves of cabbage and *Stenophragma thaliana*; *Scaptomyza adusta* Loew in cabbage and waterlily in the District of Columbia.

COQUILLET, D. W.

Two dipterous leaf-miners on garden vegetables. *Insect Life* 7, 1895, p. 381.

Records *Drosophila flaveola* Meigen (= *graminum* Fallen) mining radish leaves at Ivy City, D. C.

Papers from the Harriman Alaska Expedition IX. Entomological Results (3): Diptera. *Proc. Wash. Ac. Sci.* 2, p. 462, Dec. 1900.

*Scaptomyza flaveola* Meigen recorded from the District of Columbia.

Three new species of Diptera.

*Ent. News.* 12, No. 1, Jan. 1901, p. 18.

*Drosophila buskii* (sic) described in part from local material.

New genera and species of diptera. *Proc. Ent. Soc. Wash.* 9, 1907, p. 148.

*Pseudiasata nebulosa* described from Plummrs Id., Md.

HOWARD, L. O.

A contribution to the study of the insect fauna of human excrement. *Proc. Wash. Ac. Sci.* 2, pp. 589-590, Dec. 1900.

*Drosophila ampelophila* Loew and *D. funebris* Meigen recorded from our region.

LOEW, H.

Diptera americanae septentrionalis indigena.

Centuria secunda, 1862, pp. 99-101 *Amiota humeralis*, *Drosophila amoena*,

*D. tripunctata*, and *D. adusta* described from the District of Columbia.

Centuria septima, 1866, p. 110. *Drosophila multipunctata* (= *guttifera* Walker) similarly described.

STURTEVANT, A. H.

Notes on North American Drosophilidae with descriptions of twenty-three new species.

*Ann. Ent. Soc. Am.* 9, No. 4, Dec. 1916, pp. 323-343.

*Drosophila sulcata*, *D. melanica*, *D. pseudomelanica*, and *D. modesta* (= *tripunctata* Loew), described in part from local material.

The North American species of *Drosophila*. *Publ.* 301, Carnegie Inst. Wash., 1921, 150 pp.

Records 26 species of the family from the District of Columbia region.

New species and notes on synonymy and distribution of Muscidae Acalypteratae (Diptera).

*Am. Mus. Novitates*, No. 76, May 21, 1923, p. 10.

*Scaptomyza vittata* Coq. and *S. graminum* Fall. recorded from our region (Arlington, Va.).



